ECHOLOCATION AND ROOST SELECTION IN SEMON'S LEAF-NOSED BAT *HIPPOSIDEROS SEMONI*. *Memoirs of the Queensland Museum 42(1): 158. 1997*:- Semon's Leaf-nosed Bat *Hipposideros semoni* occurs from Cape York Peninsula to Townsville, with an isolated record W of Calliope (Schulz & de Oliveira, 1995). Hall & Richards (1979) noted this bat roosting in tree hollows and deserted buildings in rainforest areas. Hall (1995) noted its roosting in caves, mines and rock overhangs and an array of artificial roost sites, including the door handle of a car, a clothes closet, an oven and a picture rail. All recorded roosts have been of individuals (Hall, 1995) except for a ♂ and ♀ together in a cave (Schulz & de Oliveira, 1995). Little is known about roost selection and no maternity sites have been located. Known roosts near Coen have been destroyed through mining (Richards & Hall, 1994). The species is known from 10 subterranean roosts and is classified nationally as rare (Hall, 1995; Richards & Hall, 1994).

We reports echolocation and roost selection in a tower karst on Kings Plains Station (15°38', 144°58'), SW of Cooktown, 26-28 June, 1996. The tower consisted of 2 outcrops of 5ha, surrounded by semi-evergreen notophyll vine thicket up to 200m wide. Caves and fissures (32) were investigated, by a single person using a Petzl headlamp. Roosting bats were identified without being disturbed; flying bats were captured with a hand net, identified and released.

Three individuals were roosting singly in rock fissures with a southerly aspect within a radius of 30m of each other. The first was a nulliparous ♀, forearm 48.6mm and weight 9.2gm, roosting in a narrow fissure 2.1m high and 0.6m wide, 5m from the entrance.Relative humidity was 6% higher than at the entrance; temperature was the same. No other bats were roosting in this fissure. The second was a ♂ in non-breeding condition roosting 7m from the entrance in a narrow fissure 1.2m high and 0.5m wide. This fissure was deep, with two chambers at least 25m long; at the extremity of one chamber were 3 roosting Dusky Leaf-nosed bats, *Hipposideros ater*. The *H. semoni* roost site in this fissure had a relative humidity 2% lower than outside the entrance while the temperature was 3.2°C warmer. The third individual could not be caught as it was roosting in a tight fissure 0.3m wide, 5m from a near vertical entrance 3.5m by 0.4m wide. The relative humidity in this roost was 7% lower than outside the entrance.

Beneath 2 of the roosts were remains of huntsman spiders and beetle elytra suggesting they may have been prey items. The probable taking of huntsman spiders suggests that this species may be a partial 'gleaner', taking prey from surfaces such as rock faces or tree trunks. The captured ♂ and ♀ were in non-breeding condition. Other bats roosting in nearby fissures and short caves where no *H. semoni* were located were the Eastern Horseshoe bat, *Rhinolophus megaphyllus*, *H. ater* and the Common Sheathtail bat, *Taphozous georgianus*.

Echolocation calls of the captured ♀produced 284 ultrasonic sequences on 2 tapes, using the Anabat II System (Corben, 1989) and a Realistic VSC-2001 cassette recorder; 135 sequences outside the entrance of the cave (98 perching in a butterfly net, and 37 while being held), and 149 sequences after its release into the cave. Upon release, the bat hung on a rock wall and emitted ultrasonic pulses. Both recording sessions lasted 1 hour; sequences outside the cave were from 4 hours before dusk, whereas those inside were done on the hour prior to dusk. The bat was then left alone for 11minutes, to record its emergence calls. The bat emerged at 19:07 when it was dark but moonlit, without emitting echolocation calls. Simmons & Stein (1980), characterised the echolocation calls of hipposiderid bats as having a Constant Frequency (CF) component, followed and often preceded by Frequency Modulated components (FM). Each of these sequences was examined within Anabat II and recalibrated from a recorded 40KHz calibration tone. The CF components were also measured. Regardless of where the recordings were made, all sequences showed a CF component at 78KHz, 9KHz higher than hand-held *Rhinolophus megaphyllus* in the same outcrop (Fig. 1), which fits its frequency range recorded in SE Qld (M.C. de Oliveira, unpubl. data). The sequences of *H. semoni* from Kings Plains were 2-4KHz lower than using a QMC bat detector and different software call analysis package (Coles, 1993). The single roost of *H. semoni* was reminiscent of roost sites of the Northern Leafnosed bat, *H. stenotis* (Schulz & Mekhorst, 1985, 1986). *H. stenotis* specimens were also encountered as individuals roosting close to disused mineshafts in semi-dark conditions.

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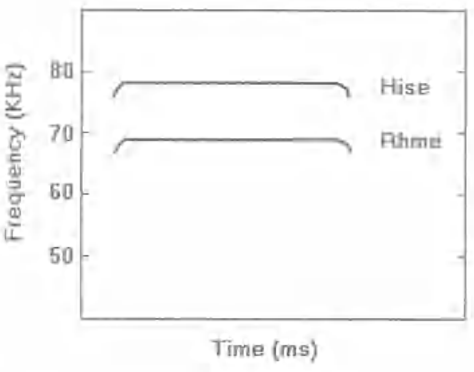

FIG. 1. Schematic representation of ultrasonic signal of *H. semoni* (Hise) and *R. megaphyllus* (Rhme), Kings Plains Stn.